Measurement of the Safety Impact of Installing ADS-B on GA Aircraft at Embry-Riddle Aeronautical University (Interim Report)

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Hypothesis

- ADS-B with supporting GBTs will result in a decrease in the number of aircraft near mid-air collisions at uncontrolled, non-towered airfields.
- Implications assessed for application to general aviation activity nationally.
- Implications regarding the effectiveness of ADS-B to decrease near mid-air collisions nationally may also be made.

Accomplished Tasks

- Harvested NMAC data for
  - Daytona Beach for the years 2000 thru 2003
  - Prescott for the years 1996 thru 2003
- Categorized NMAC events as occurring in one of three areas within a 50nm radius of subject airports (i.e. DAB and PRC)
  - Daytona Beach (completed analysis for the years 2000 thru 2003)
    - Practice Areas
    - Traffic Patterns (including 45 deg. dogleg to downwind)
    - Ground
  - Prescott (still a work in progress for the years 1996 thru 2003)
    - **VFR vs. IFR** (statistically insignificant for DAB, where 99% were VFR reports, but may prove significant for PRC, where more solo NMACs were reported in addition to dual

Accomplished Tasks

- Analyzed actual number of reported NMAC frequencies, calculated rate of incidents per 100,000 flight hours
  - –Daytona Beach (for the years 2000 thru 2003)
    - •Completed by raw NMAC frequency per month/per year/per incident location
    - •Completed by NMAC frequency per 100,000 flight hours per month/per year/per incident location
  - –Prescott (for the years 1996 thru 2003)
    - •Completed by raw NMAC frequency per month/per year/per incident location

Accomplished Tasks

- ADS-B Installed in all A/C at Daytona Beach and Prescott
  - Typical Installation – C-172

ADS-B on the Screen

ADS-B on the Screen


Targets
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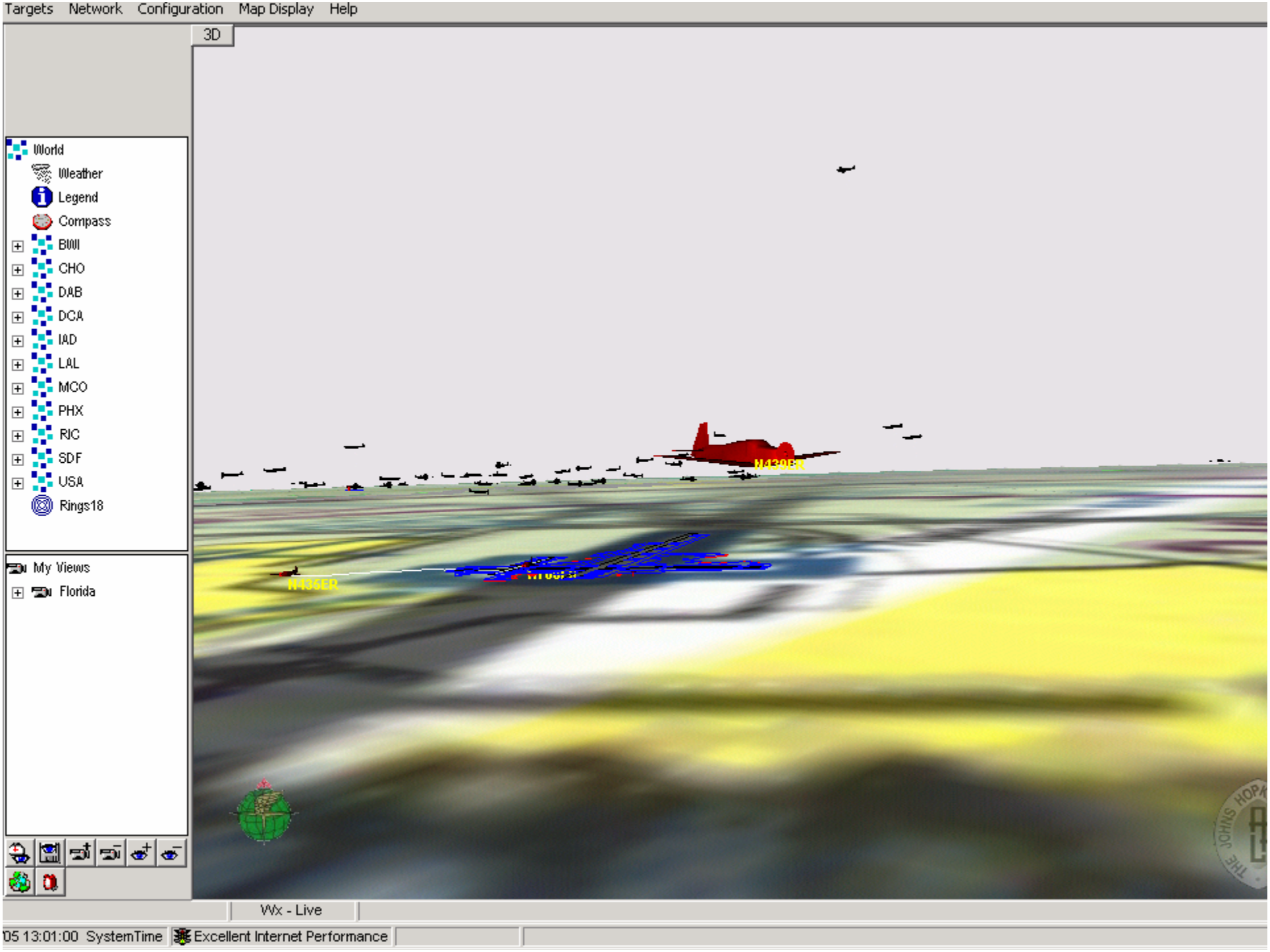
RE: ADS-B Pics - Message...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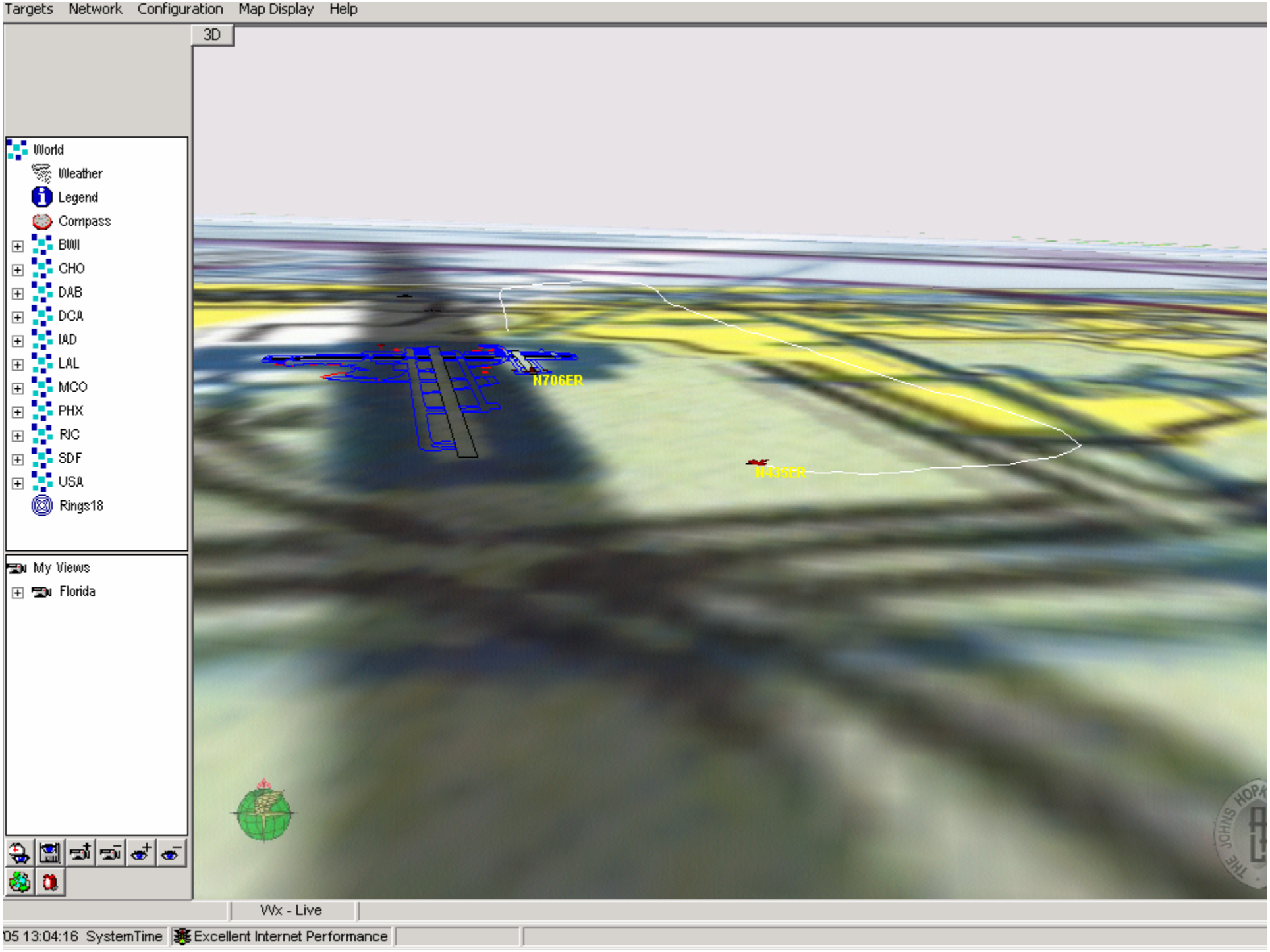
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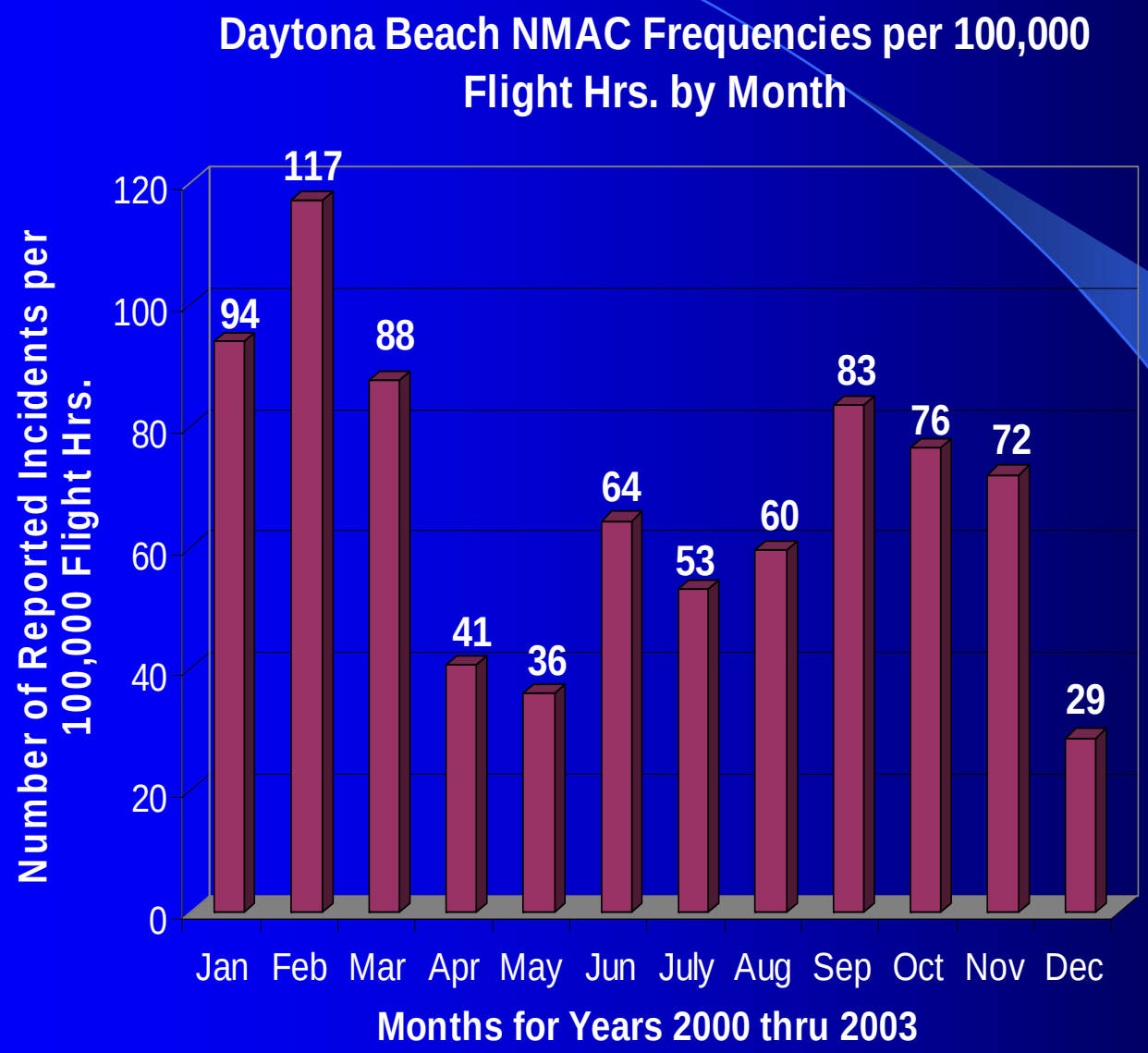
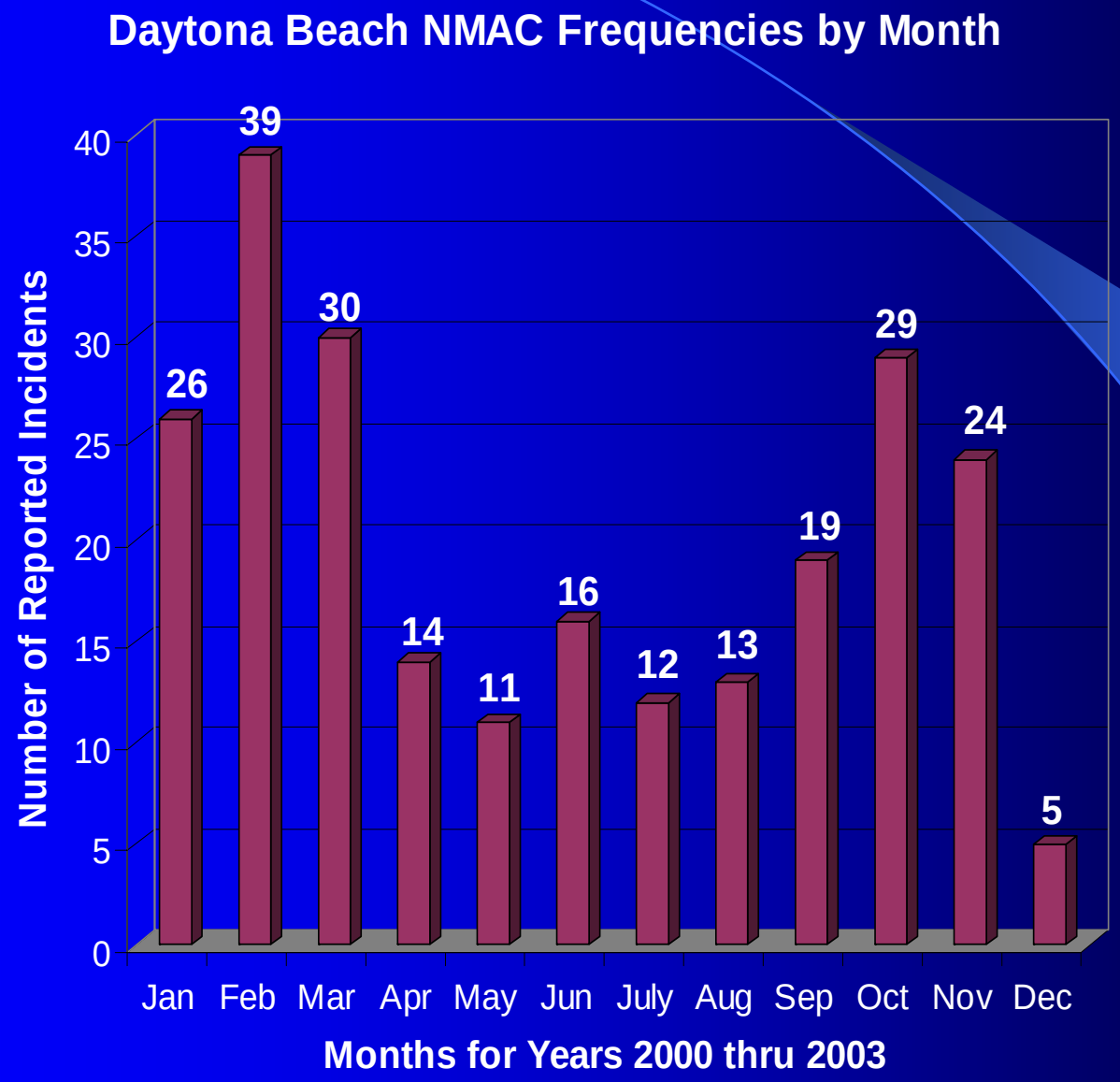
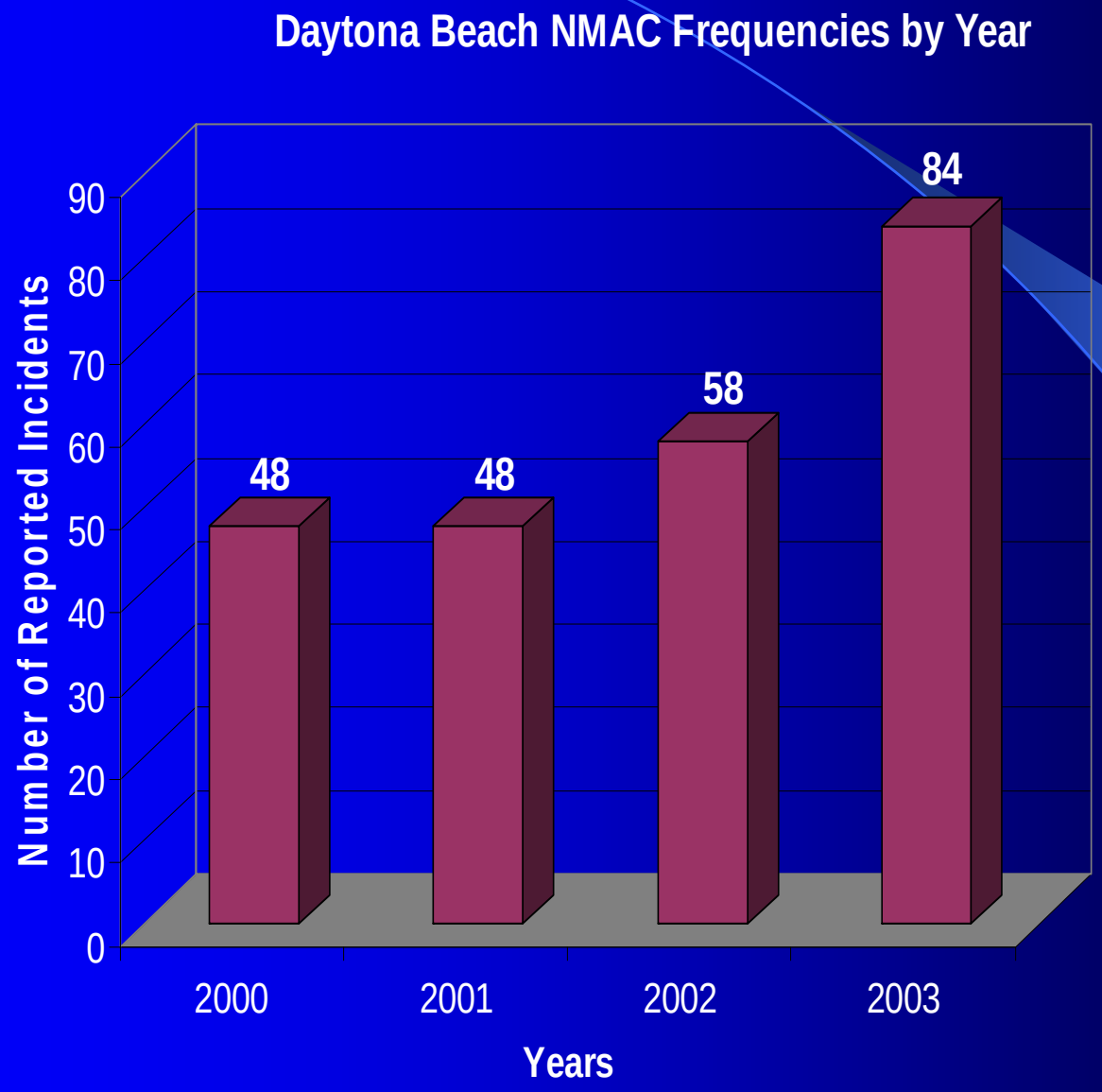
Daytona Beach



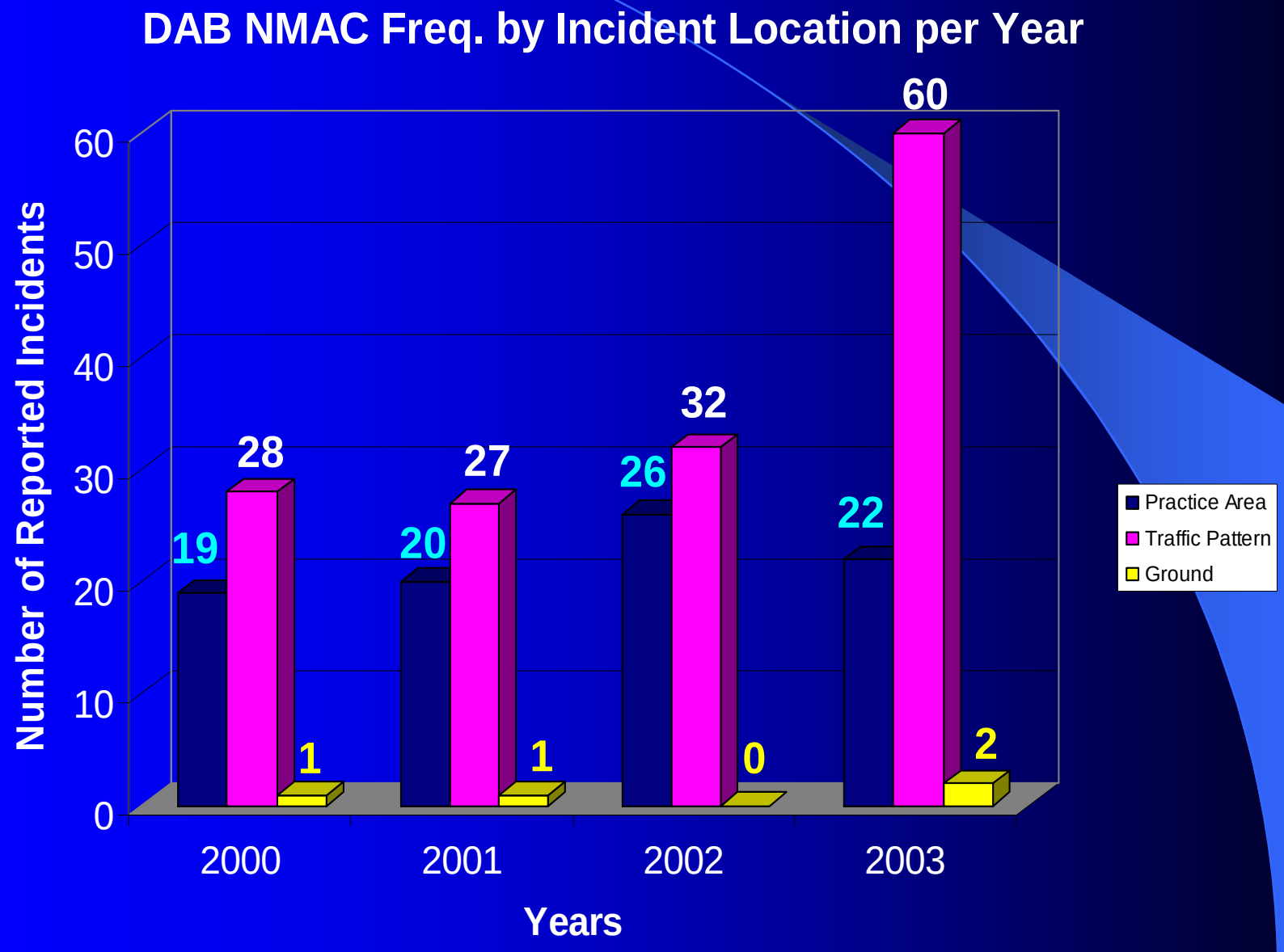
Daytona Beach



Daytona Beach

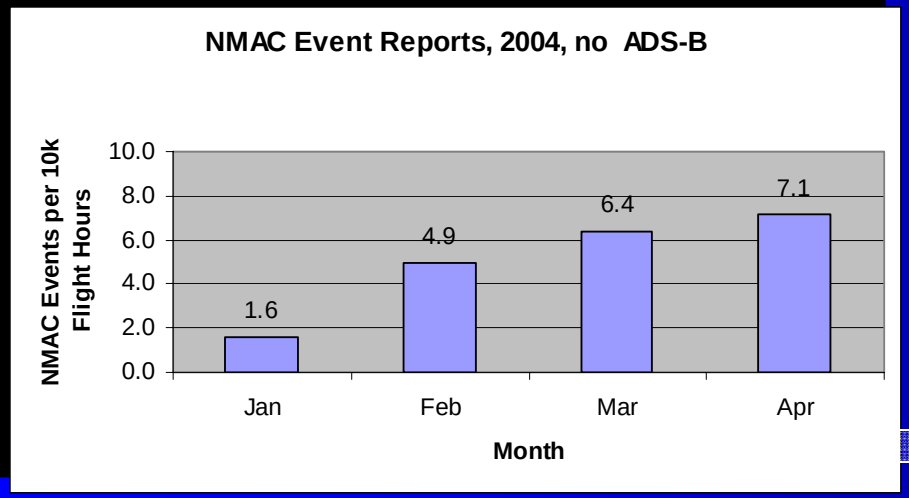


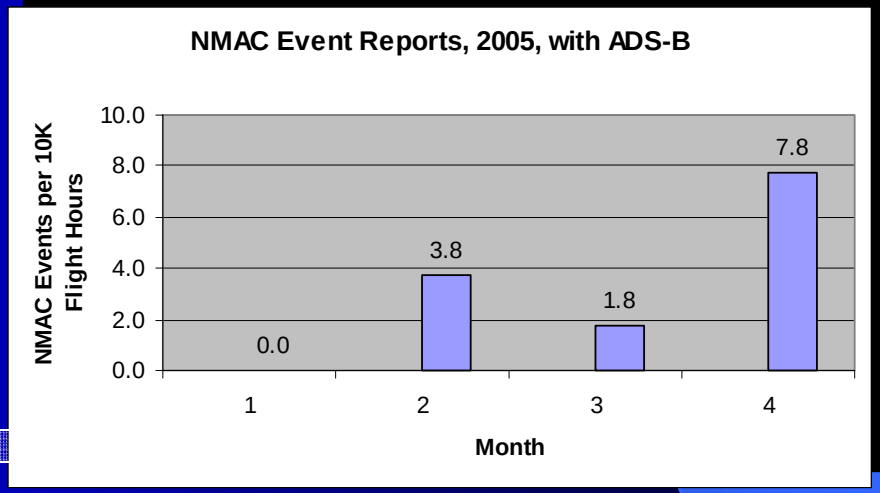
Daytona Beach



Daytona Beach / 2004 -2005

NMAC EVENT REPORTS PER 10K FLIGHT HOURS





Next Steps

- Continue to acquire and harvest currently unavailable data.
- Monitor and gather data 24 months
- Calculate rate per 10k hours
- Assess

Summary

- Hypothesis
- Data Collected
- Future Collection
- Implications for all general aviation